

REMARKS

SECTION 103 REJECTION BASED ON *SARKAR* AND *KOLLIAS*

The Examiner rejects claims 1-27 as being unpatentable over *Sarkar*¹ in view of *Kollias*.² In doing so, the Examiner concedes that *Sarkar* fails to teach “a laser with coupling medium and target,”³ but asserts that *Kollias* teaches “using laser-induced impulse transients to deliver compounds, such as therapeutic agents, to epithelial cells.”⁴

In *Sarkar*, one wipes a patient's tooth with a swab, thereby transferring fragments of a bacteria-laden biofilm onto the swab. Then, one stirs the swab in a solution containing a dye. Finally, one irradiates the resulting mixture with a laser.⁵

It is apparent that there is no biofilm in the resulting mixture. Any fragments obtained from the biofilm on the tooth disintegrate in the mixture. Thus, what *Sarkar* really teaches is illuminating a mixture containing what used to be parts of a biofilm.

In explaining his motivation to combine the references, the Examiner suggests that “the biofilm of *Sarkar* could be used in the same setup as applicant has used,”⁶ in effect suggesting that an element in the prior art be combined with the disclosure of the present application. In doing so, the Examiner seems to be relying on Applicant's own disclosure as a basis for rejection. But this is improper. The Applicant's disclosure is not prior art, and cannot be relied upon in an obviousness rejection.

Furthermore, the Examiner suggests that the motivation to combine the references arises from the “teaching of '325 that theirs is conventional apparatus for generating laser-induced stress waves.”⁷

It is unclear why it is relevant that *Kollias* teaches an apparatus for generating laser-induced stress waves. *Sarkar* fails to teach laser-induced stress waves. What *Sarkar* teaches is

¹ J. Periodont. Res., 28, pp. 204-210.

² WO 09/23325

³ Office Action of May 4, 2007, p. 5.

⁴ Id.

⁵ *Sarkar*, p. 205.

⁶ Office Action of May 4, 2007, p. 6.

⁷ Office Action of May 4, 2007, p. 6.

exposing bacteria to 30 seconds of laser radiation in the presence of a photosensitizing dye.⁸ This is not a prescription for generating stress-waves. It is a prescription for heating.

Using a laser to essentially “cook” bacteria is unrelated to and incompatible with using the laser-induced compressive stress waves of *Kollias* to pummel bacteria. Therefore, one of ordinary skill in the art who encountered *Sarkar* would have had no reason to be interested in a “conventional apparatus for generating laser-induced stress waves.”

Independent claims 25 and 26 are directed toward the same subject matter as independent claim 1 and are patentable for at least the same reasons as discussed above.

For at least these reasons, the Applicant submits that independent claims 1, 25, and 26 are patentable.

SECTION 103 REJECTION BASED ON *SADOUDI* AND *KOLLIAS*

The Examiner rejects independent claim 25 as unpatentable over *Sadoudi*⁹ in view of *Kollias*. The Examiner indicates that *Sadoudi* teaches “treating biofilms with pulsed laser beams,”¹⁰ and that the “effect of permeabilizing the biofilm is inherent to the pulsed laser beam.”¹¹

A rejection based on inherency requires that the inherent feature be a necessary result of what is disclosed. “Inherency...may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.”¹² In this case, the Examiner must show that the *Sadoudi* treatment *necessarily* results in biofilm permeabilization, and that avoiding biofilm permeabilization would thus be impossible.

Sadoudi indicates that “[t]he way by which the biofilmed surface was decontaminated in this instance results more probably from ablation (removal) than inactivation (through chemical or thermal effect).”

⁸ *Sarkar*, p. 206.

⁹ Letters in Applied Microbiology, 24, pp. 177-179, 1997.

¹⁰ Office Action of May 4, 2007, p. 6.

¹¹ *Id.*

¹² *Hansgird v. Kemmer*, 26 C.C.P.A. 937, 940, 102 F.2d 212, 214 (C.C.P.A.1939).

It is unclear why ablation and/or inactivation would always result in permeabilization. *Sadoudi* does not appear to have recognized the possibility of biofilm permeabilization. Nor has the Examiner demonstrated that it is impossible to avoid biofilm permeabilization using the method disclosed by *Sadoudi*.

Furthermore, the goal of the *Sadoudi* method is the destruction of the biofilm. One of ordinary skill in the art who has just ablated away a biofilm using the *Sadoudi* method would hardly be expected to have any interest in permeabilizing biofilm. After all, one of ordinary skill in the art would surely have recognized that, with the biofilm having just been blasted away by ablation, there would be no biofilm left to permeabilize. Without an intact biofilm, there would have been no motivation whatsoever for one of ordinary skill in the art to combine *Sadoudi* with *Kollias*.

The Examiner further suggests that one of ordinary skill in the art would have found it obvious to combine the teaching of *Kollias* with that of *Sadoudi* "because of the teaching of '325 that theirs is [sic] conventional apparatus for generating laser beams."

This reason for combining the references makes little sense. One of ordinary skill in the art who has read *Sadoudi* would have had no reason to turn to *Kollias* just to know what a "conventional apparatus for generating laser beams" might look like. After all, it would have been no mystery to one of ordinary skill in the art what "a conventional apparatus for generating laser beams" looks like. In fact, *Sadoudi* already discusses laser beams.

Applicant also disputes the proposition that *Kollias* teaches "a conventional apparatus for generating laser beams." *Kollias* does not discuss how to generate a laser beam. There is no discussion in *Kollias* of, for example, lasing materials or population inversions, or anything that might reasonably apprise one of ordinary skill in the art on how to build "a conventional apparatus for generating laser beams."

For at least these reasons, the Applicant submits that the independent claim 25 is patentable.

Conclusion

Applicant : Nikolaos Soukos et al.
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Now pending in this application are claims 1-27, of which claims 1, 25, and 26 are independent.

That Applicant has omitted certain arguments or avoided discussing particular claims is not intended to be an admission that no other arguments exist or that those claims are regarded as unpatentable.

No fees are believed to be due in connection with the filing of this response. However, to the extent fees are due, or if a refund is forthcoming, please adjust our deposit account 06-1050, referencing Attorney Docket No. 00786-421002.

Respectfully submitted,

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